

Notice of Allowability

Application No.

10/033,642

Examiner

Charles Chow

Applicant(s)

YANG ET AL.

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/05/2005.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☒ The drawings filed on 010302 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>6/7/2005</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Detailed Action

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with attorney Howard Chen on 6/7/2005.

Attorney has authorized examiner to amend claims 6-7, 9-10, as follow:

*In **claim 6**, line 1, change "6" to 5.*

*In **claim 7**, line 1, change "7" to 6.*

*In **claim 9**, line 1, change "9" to 8.*

*In **claim 10**, line 1, change "10" to 9*

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

Claims 1-11 are allowable over the prior art of record, the prior art fails to teach singly, particularly, or in combination, the subject matter, (pages 6-7 of applicant amendment), for the structure an analog filter receiving quadrature baseband signal from said multiplier, an analog-to-digital converter ADC conversing a quadrature baseband component to a digital baseband signal, **a 5th order elliptical filter filtering said quadrature baseband component and a phase equalizer compensating for phase distortion arising in said**

analog filter, having transfer function $H_{eq}(z) = (b_0 + b_1z^{-1} + b_2z^{-2}) / (a_0 + a_1z^{-1} + a_2z^{-2})$, where $a_0=B_2$, $a_1=b_1$, $a_2=b_0$, for the direction conversion wireless receiver for removing the distortion introduced by the high order sharp frequency cut off 5th order filter having severe phase distortion, with the accurate digital phase compensation according to the special quadratic transfer function H_{eq} , to improve the reception quality, as shown in the independent claims 1, 5, 8. The dependent claims are also allowable due to their dependency upon the independent claims and the additional claimed features.

The closest cited prior art from **Aschwanden (US 5,896,306)** teaches a direct conversion receiver DCR for quadrature demodulation (Fig. 1), the analog to digital converter ADC-A, ADC-B, converts signal from low pass filter LPF-A, LPF-B, to data stream (col. 3, lines 30-34), the phase corrector-A, phase corrector-B, cancels the distorted phase response of the group delay of the low pass filter LPF-A/LPF-B, due to the sharp cut off of the frequency response of the low pass filter LPF (col. 3, lines 34-45; col. 3, lines 7-23). Aschwanden fails to teach the **5th order elliptical filter for quadrature baseband, the phase equalizer, a phase equalizer compensating for phase distortion arising in said analog filter, having transfer function $H_{eq}(z) = (b_0 + b_1z^{-1} + b_2z^{-2}) / (a_0 + a_1z^{-1} + a_2z^{-2})$, where $a_0=B_2$, $a_1=b_1$, $a_2=b_0$.**

Other prior arts in below has been considered, but they fail to teach the above claimed features.

Peterzell (US 2002/0123,319 A1) teaches the 5th order IIR filter 910 for rejecting jammers in the digital base band signal (Fig. 8, [0089]) of the direct conversion receiver 800 (Fig. 8, abstract, [0002, 0037]). Peterzell teaches an improved technique for reducing the jammer interference [0033-0037] by including the 5th order IIR filter. Peterzell fails to teach the 5th

order elliptic filter, having accurate digital phase equalizer having transfer function $H_{eq}(z) = (b_0 + b_1 z^{-1} + b_2 z^{-2}) / (a_0 + a_1 z^{-1} + a_2 z^{-2})$.

Choi et al. (US 2003/0214,926 A1) teaches the phase equalizer 205 having the second order all pass transfer function in equation (1) to equation (4), for the all pass digital phase equalizer [0079-0086; 0014-0018].

Lipowski et al. (US 5,828,955) teaches a receiver having the DPS 40 for adjusting, correcting, amplitude, phase error by equalizing the amplitude, phase of the quadrature signal (Fig. 2, abstract).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information

Art Unit: 2685

about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow *C.C.*

June 2, 2005.


EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2000